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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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SHINJYU GLOBAL IP COUNSELORS, LLP 1233 20TH STREET, NW, SUITE 700 WASHINGTON, DC 20036-2680			WOODS, ERIC V	
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DATE MAILED: 05/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

WTT

Office Action Summary	Application No. 10/669,050	Applicant(s) KATO ET AL.	
	Examiner Eric V Woods	Art Unit 2672	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-20 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9,10,13-16 and 19 is/are allowed.
- 6) ☒ Claim(s) 1-8,11,12 and 17 is/are rejected.
- 7) ☒ Claim(s) 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. Examiner accepts the revised drawings.

Specification

2. Examiner accepts the revised specification, abstract, and title.

Response to Arguments

3. Applicant's arguments -- see pages 1 and 2 of Arguments, filed 3 March 2005, with respect to the objections to the specification have been fully considered and are persuasive. The objections to the specifications have been withdrawn.
4. Applicant's arguments -- see Arguments page 2, filed 3 March 2005, with respect to the drawings have been fully considered and are persuasive. The objections to the drawings have been withdrawn.
5. In view of Arguments pages 5-9 and applicant's amendment, most of the rejections to claims 3, 4-8, 9-14, and 19 under 35 U.S.C. 112, second paragraph, have been rendered moot and therefore withdrawn. Applicant's arguments concerning the center deviation not being an essential element was found to be persuasive in light of the added limitation brought in via amendment. The only exception is below -- one rejection to claims 7 and 8 has not been withdrawn.
6. Applicant's arguments (pages 5-6) have been considered but are not persuasive with respect to the rejections of claims 7-8 under 35 U.S.C. 112, second paragraph. The asserted definition of the term "physique" on Arguments pages 5-6 is understood, but does not obviate the original grounds for rejection of those claims, which was that it

was unclear precisely which portions of the physique (e.g. weight, height, et cetera) were being monitored or being claimed, as applicant's claims recite "sitting posture" and also "distribution of body pressure on a seat", which clearly would seem to be indicative of weight. Namely, the purpose of a rejection under 35 U.S.C. 112, second paragraph, is to clarify the metes and bounds of the claims. The claims as worded would not leave one of ordinary skill in the art, much less the general public, sure what embodiments were or were not covered by these specific claims.

It should be noted that applicant could overcome these rejections by submitting in the response to this office action a specific listing of the properties intended to be covered by this term and limiting claim scope to those factors. Also, amendment of the claims to reflect a more concrete term – perhaps weight, mass, shape of a person – would also result in the withdrawal of these rejections. If applicant's representative would further like to discuss this point, applicant's representative is invited to call examiner and schedule an interview.

7. Applicant's arguments (see Arguments pages 8-20) with respect to the rejections of claims 1-9 and 13-20 under 35 U.S.C. 103(a) are found to be persuasive and as such stand withdrawn.

However, applicant's arguments are moot in view of the new grounds of rejection presented below.

8. Applicant's arguments on page 14 have been fully considered with respect to the rejection of claims 11 and 12 under 35 U.S.C. 103(a) and are not persuasive. Applicant asserts that the anti-biasing circuit of Abali would not be able to detect acceleration or

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deceleration, but this argument is spurious. A circuit capable of biasing against constant acceleration must *prima facie* have a means for determining when such constant acceleration begins and ends; otherwise, such a circuit would be nonfunctional, stuck in a permanent "on" position, and/or would not be effective for the purpose it was designed for. After all, the purpose of the anti-bias circuit is to compensate for long duration constant acceleration periods. It is inherent for the circuit to function correctly that it would be able to turn on and off when it detected non-constant acceleration or deceleration.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-3 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Covannon et al (US 2002/0186348) in view of Abali.

As to claims 1 and 20,

A display device comprising:

- A display section configured and arranged to display an image within a display region of a non-head mounted display screen; (Abali Figs. 1 (element 10), 6A; col. 2:1-15)
- A motion detecting section configured and arranged to detect a movement of the display section; (Abali 2:1-55, particularly 2:25-30 and 2:40-50)

- An image displacement computing section configured to compute a translation displacement of the display section based on the movement of the display section; and (Abali 2:50-55, discussed more specifically in 6:5-60)
- A viewer motion determining section configured and arranged to determine a viewer motion value that is indicative of a movement of a head portion of a viewer watching the display section; (Covannon [0038, 0048-0050])
- A relative displacement computing section configured to compute a relative displacement between the display section and the head portion of the viewer based on the translational displacement of the display section computed by the image displacement computing section and the viewer motion value of the head portion of the view determined by the viewer motion determination section; (Covannon Figs. 5-7 and [0061-0063], where the system of Covannon clearly computes the relative motion of the users head with respect to the display and appropriately translates the image to compensate; see also Covannon [0038, 0048-0050])
- Display control section configured to adjust a display position of the image within the display region of the display section based at least on the translational displacement of the display section. (Abali 2:1-55, particularly 2:50-55 and implemented in 6:5-60, particularly Fig. 2 where such a translation is shown).

Reference Abali clearly teaches most of the limitations of the above claim with the exception of the relative motion compensation system of Covannon. Clearly, as stated in the last office action, Abali teaches those components very clearly in a manner that is clear enough to sustain under 35 U.S.C. 102(b). Covannon clearly teaches a

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system that provides a display that compensates for the user's relative motion, and the claims are written such that it would cover various embodiments (see claim 1). Clearly, if the system of Covannon were used in a platform undergoing motion, it would suffer from the same problems that are well known in the art, e.g. inducing motion sickness in users (Abali 1:10-30, 2:1-20). Motivation for combination comes from the fact that Abali clearly teaches that it is necessary to provide motion compensation to prevent the user from feeling disturbed by the motion, and so the motivation would be inherent in the second reference. The combination would indeed be operative, and the combination is not improper hindsight.

11. As to claim 2,

The display device as recited in claim 1, wherein:

- The display section is configured and arranged to be fixedly coupled to a vehicle to display the image to the viewer inside the vehicle, and (6:58-65, 7:50-60, particularly the mention of the embodiment as applied to aircraft avionics, which are most assuredly "fixedly coupled" to a vehicle or airframe)
- The motion detecting section is further configured and arranged to detect the movement of the display section by detecting a movement of the vehicle. (6:58-65 and 7:50-60 again)

Reference Abali clearly teaches that his invention can be used in aircraft avionics, which clearly means that such systems are "fixedly coupled" to the vehicle. Further, Abali clearly discusses how the system compensates for vibration in an automobile (6:55-67) and naval ships and aircraft (7:50-60), which establishes that Abali

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is compensating for vibration and movement of the vehicle. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Abali such that the display would be fixedly mounted to the vehicle and that the system compensate for the motion of such a vehicle, as is clearly established above that Abali was intended for such purposes.

12. As to claim 3,

The display device as recited in claim 2, wherein

-The display control section is further configured to shift the image by an amount based on the relative displacement to stabilize the image to the viewer.

Clearly the system of Covannon cancels the relative motion of the user by shifting the motion by the amount required to compensate for the head movement of the user as set forth in the rejection to claim 1. Further, shifting the image is obvious in view of Abali. Clearly, as established in the rejection to claim 2 above, the system cancels motion by the vehicle or underlying platform (Abali Figs. 8A-8E show this process), where reference Abali teaches canceling motion (2:1-12) and (Abali 6:45-67) translational motion and this is done by shifting the image. Motivation for combination is taken from claim 1 above and incorporated by reference.

14. As to claim 17,

The display device as recited in claim 1, wherein

-The display section, the motion detecting section, the image displacement computing section and display control section are configured and arranged to be part of a portable, hand held device.

Reference Abali clearly teaches this limitation, as in claims 1:15-30 various portable devices (laptop computers, personal digital assistants (PDA), et cetera) are taught and the invention is clearly directed at means of correcting vibrations for screens in vehicles, etc., and clearly it is reasonable that such devices be portable, as this is how Abali opens his disclosure – that this a problem that he aims to correct. Clearly, it would be obvious to have all the components in one portable, hand-held device, as the invention of Abali is very small (comparatively, if MEMS accelerometers and some kind of ASIC or IC is used, such a device could be easily fit on a piece of silicon 4mm² or smaller, as a typical MEMS accelerometer is approximately these dimensions and digital circuitry of the type required here requires negligible die space (a few amplifiers, registers, et cetera) at current process geometries or even at 0.5μ m, as it is primarily utilizing the existing display circuitry (note 6:25-40), which would clearly fit inside a handheld device).

18. Claims 5-6 are rejected under 35 U.S.C. 103(a) as unpatentable over Abali and Covannon in view of Parker et al (US PGPub 2002/0099257)('Parker').

19. As to claim 5,

The display device as recited in claim 2, further comprising

-A head motion detecting section configured and arranged to detect the movement of the head portion of the viewer, (Parker [0065])

-The viewer motion determining section being further configured and arranged to determine the viewer motion value based on a detection result from the head motion detecting section. (Parker [0050-0052, 0061-0062, 0065])

Clearly, as established above in the rejection to claim 4 above, reference Abali does not expressly teach these limitations. However, Parker clearly teaches head tracking as established above, and *prima facie* the system of Parker would take the input and utilize it, e.g. would feed the results to the system of Abali. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the systems of Parker and Abali as set forth above to create a system that, as cited above, could perform head tracking to prevent motion sickness ([0002-0005, 0065] Parker), which is also a stated goal of applicant.

20. As to claim 6,

The display device as recited in claim 2, wherein

-The viewer motion determining section is further configured and arranged to determine the viewer motion value based on at least one of a response function of vibration of a human body corresponding to the viewer in response to the movement of the vehicle and a numerical model indicative of the vibration of the human body in response to the movement of the vehicle.

Clearly, as established above in the rejection to claim 4 above, reference Abali does not expressly teach these limitations. However, Parker clearly teaches head tracking as established above, and *prima facie* the system of Parker would take the input and utilize it, e.g. would feed the results to the system of Abali. Clearly, the system of Parker also uses a numerical model of how human beings respond to the vibration of the human body to prevent motion sickness (Parker [0010] and [0015].) It would have been obvious to one having ordinary skill in the art at the time the invention

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was made to combine the systems of Parker and Abali as set forth above to create a system that, as cited above, could perform head tracking to prevent motion sickness ([0002-0005, 0065] Parker), which is also a stated goal of applicant.

21. Claims 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abali.

22. As to claim 11,

A display device comprising:

- A display section configured and arranged to display an image within a display region of a non-head mounted display screen, the display section being configured and arranged to be fixedly couple to a vehicle to display the image to a passenger inside the vehicle; (Abali Figs. 1 (element 10), 6A; col. 2:1-15)(6:58-65, 7:50-60, particularly the mention of the embodiment as applied to aircraft avionics, which are most assuredly "fixedly coupled" to a vehicle or airframe)
- A motion detecting section configured and arranged to detect a movement of the display section; (2:1-55, particularly 2:25-30 and 2:40-50)
- An image displacement computing section configured to compute a translation displacement of the display section based on the movement of the display section; (2:50-55, discussed more specifically in 6:5-60)
- A center deviation computing section configured and arranged to compute a center deviation between a center of the image and a center of the display region of the display section, the center deviation computing section being further configured and arranged to stop computing the center deviation upon determining that the vehicle is accelerating or

decelerating; (Fig. 3 clearly illustrates the shifting operation, and 4:20-40 discussed the procedure in detail, as well as 7:15-40, and for the Fig. 3 procedure to performed (e.g. re-centering), the center of both the display and of the translated image must *prima facie* be known, and if both are known, it is clear that the center deviation is also known)(A circuit capable of biasing against constant acceleration must *prima facie* have a means for determining when such constant acceleration begins and ends; otherwise, such a circuit would be nonfunctional, stuck in a permanent "on" position, and/or would not be effective for the purpose it was designed for. After all, the purpose of the anti-bias circuit is to compensate for long duration constant acceleration periods. It is inherent for the circuit to function correctly that it would be able to turn on and off when it detected non-constant acceleration or deceleration.)(See also the Response to Arguments section above for an explanation of this particular limitation and how Abali teaches it)

-A display control section configured to adjust a display position of the image within the display region of the display section based on the translational displacement of the display section and the center deviation. (Abali 2:1-55, particularly 2:50-55 and implemented in 6:5-60, particularly Fig. 2 where such a translation is shown) (Again, Fig. 3 clearly illustrates that the display device performs the recited function, and 4:20-40 teaches that such image is indeed displayed such that the center deviation is canceled.)

Reference Abali clearly teaches all the limitations of the above claims as set forth in the above cited reference (e.g. this rejection would stand under 102(b), thus no

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modification is required). It would have been obvious to modify Abali in any minor ways required to meet the above limitations.

23. As to claim 12,

The display device as recited in claim 11, wherein,

-The acceleration/deceleration operation determining section is further configured and arranged to determine whether the vehicle is accelerating or decelerating by detecting at least one of an accelerator pedal operation, a steering operation, and a vehicle motion.

This limitation is clearly taught by Abali. See the rejection to claim 11, where it is clearly established that the basis for determining the acceleration or deceleration was vehicular motion, which meets the above-recited limitation.

24. As to claim 13,

The display device as recited in claim 10, wherein

-An acceleration / deceleration operation determining section configured and arranged to determine whether the vehicle is accelerating or decelerating,

-The center deviation computing section being further configured and arranged to stop computing the center deviation when it is determined that the vehicle is accelerating or decelerating.

Reference Abali teaches this limitation – in the last section, 7:52-57, the anti-bias circuit is mentioned to compensate for constant acceleration. (See 7:15-30, that such measurements are taken) *Prima facie*, if there is a circuit to compensate for constant acceleration, the system must be aware of when acceleration begins and ends (the

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accelerometers clearly can provide this data). When under constant acceleration, the accelerometers would provide a constant output, which would then be compensated for by the anti-bias circuitry, the point being that the display would remain shifted to one side even though this would be unnecessary otherwise. Given that an anti-bias circuit inherently pushes a system containing it back to the neutral or no-bias position (or removes the offset from constant acceleration), when such circuit is in operation (e.g. under periods of constant acceleration or deceleration), the system would clearly not be re-centering the image (at least, not by the amount of shift induced by the acceleration). As such, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify it to perform the recited limitations of the above claim if necessary.

25. As to claim 14,

The display device as recited in claim 13, wherein

-The acceleration / deceleration operation determining section is further configured and arranged to determine whether the vehicle is accelerating or decelerating by detecting at least one of an accelerator pedal operation, a steering operation, and a vehicle motion.

This limitation is clearly taught by Abali. See the rejection to claim 13, where it is clearly established that the basis for determining the acceleration or deceleration was vehicular motion, which meets the above-recited limitation. It would have been obvious to modify Abali in any minor ways required to meet the above limitations.

Allowable Subject Matter

26. Claims 9-10, 13-16, and 19 are allowed.

The following is an examiner's statement of reasons for allowance for claim 19: prior art does not teach the use of a head tracking system / relative displacement computational unit coupled with a system that also compensates the unit for the motion of the vehicle in the manner specified, in that the head-tracking system of applicant is similar to that used by Parker, but the Parker reference does not teach relative motion displacement measurement.

Further, claims 9-10 and 13-14 are allowable in light of applicant's amendment as stated in Arguments pages 11-12. There simply is not a basis in prior art for simultaneously re-centering the image and correcting for translational displacement as recited. Claims 10 and 13-14 are allowable as they depend upon allowable claim 9.

Finally, claim 15 is allowable because the specific configuration of determination of acceleration into high and low frequency components that are or are not detectable by users is known in the art (Okazaki) and applicant concedes that the combination of Abali and Okazaki might very well be a legitimate combination for that specific limitation (Arguments page 17), but the specific shifting of the image based on high and low frequency components in a translation manner is not known and is therefore allowable. Claim 16 is allowable because it is dependent upon allowable claim 15.

27. Claims 7-8 and 18 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance of the above claims: in claims 7-8, prior art systems exist that compensate non-head mounted displays for movement and vibration (Abali) and use human-based models of processing to alleviate motion sickness from vibration-like effects of on people (Parker) using accelerometers that are head-mounted (Parker) or not (Abali) similar to Okazaki that filter high- and low-frequency components. However, systems that estimate and make such changes based on physique or weight measurements per se are not known and appear to be a relatively novel variation. In claim 18, the system of Covannon is not portable nor is it hand-held.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric V Woods whose telephone number is 571-272-7775. The examiner can normally be reached on M-F 7:30-4:30 alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Razavi can be reached on 571-272-7664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Eric Woods


JEFFREY BRIES
PRIMARY EXAMINER

May 10, 2005